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ABSTRACT

This document, which is intended as a guide for work force preparation program providers, details the Illinois occupational skill standards for programs preparing students for employment in occupations in the row crop production cluster. The document begins with a brief overview of the Illinois perspective on occupational skill standards and credentialing, the process used to develop the skill standards, and assumptions underlying the standards. Presented next are skill standards for 36 tasks typically performed by workers involved in row crop production. Each skill standard statement contains the following components: (1) the actual skill standard (including the conditions of performance, work to be performed, and performance criteria); (2) performance elements and assessment criteria; and (3) a recommended assessment and credentialing approach. The following are among the tasks for which skill standards are provided: follow accident/emergency procedures; operate equipment; repair equipment in the field; handle, plan, and produce crops; and manage crop production. The following items are appended: list of standard tool box components; glossary; lists of Illinois Occupational Skill Standards and Credentialing Council, Agriculture and Natural Resources Subcouncil, and Row Crop Production Cluster

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Standards Development Committee members; Agriculture and Natural Resources Subcouncil Row Crop Production cluster skill standards recognition proposal; and list of necessary workplace skills. (MN)

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ILLINOIS

OCCUPATIONAL SKILL STANDARDS

ROW CROP PRODUCTION CLUSTER

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2

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ILLINOIS OCCUPATIONAL SKILL STANDARDS
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ILLINOIS OCCUPATIONAL SKILL STANDARDS

ROW CROP PRODUCTION CLUSTER

Endorsed for Illinois
by the
Illinois Occupational Skill Standards and
Credentialing Council

MESSAGE TO ILLINOIS CITIZENS

Dear Citizens of Illinois:

Preparing youth and adults to enter the workforce and to be able to contribute to society throughout their lives is critical to the economy of Illinois. Public and private interest in establishing national and state systems of industry-driven skill standards and credentials is growing in the United States, especially for occupations that require less than a four-year college degree. This interest stems from the understanding that the United States will increasingly compete internationally and the need to increase the skills and productivity of the front-line workforce. The major purpose of skill standards is to promote education and training investment and ensure that this education and training enables students and workers to meet industry standards that are benchmarked to our major international competitors.

The Illinois Occupational Skill Standards and Credentialing Council (IOSSCC) has been working with industry subcouncils, the Illinois State Board of Education and other partnering agencies to adopt, adapt and/or develop skill standards for high-demand occupations. Skill standards products are being developed for a myriad of industries, occupational clusters and occupations. This document represents the collaborative effort of the Agriculture and Natural Resources Subcouncil, and the Row Crop Production Cluster Standards Development Committee.

These skill standards will serve as a guide to workforce preparation program providers in defining content for their programs and to employers to establish the skills and standards necessary for job acquisition. These standards will also serve as a mechanism for communication among education, business, industry and labor.

We encourage you to review these standards and share your comments. This effort has involved a great many people from business, industry and labor. Comments regarding their usefulness in curriculum and assessment design, as well as your needs for in-service and technical assistance in their implementation are critical to our efforts to move forward and improve the documents.

Questions concerning this document may be directed to:

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We look forward to your comments.

Sincerely,

The Members of the IOSSCC

THE ILLINOIS PERSPECTIVE

The Illinois Occupational Skill Standards and Credentialing Council (IOSSCC) endorses occupational skill standards and credentialing systems for occupations that (a) require basic workplace skills and technical training, (b) provide a large number of jobs with either moderate or high earnings, and (c) provide career advancement opportunities to related occupations with moderate or high earnings. The nine-member Council was established by the Occupational Skill Standards Act (PA 87-1210). The Council, representing business, industry and labor and working with the Illinois State Board of Education in partnership with the Illinois Community College Board, Illinois Board of Higher Education, Illinois Department of Employment Security and Illinois Department of Commerce and Community Affairs, has created a common vision for workforce development in Illinois.

Vision

It is the vision of the IOSSCC to develop a statewide system of industry-defined and recognized skill standards and credentials for all major skilled occupations providing strong employment and earnings opportunities in Illinois. Information related to occupational employment and earning opportunities is determined by the Illinois Occupational Information Coordinating Committee (IOICC) in cooperation with business and industry.

Subcouncils and Standards Development Committees

Under the direction of the Council, and in cooperation with organizations such as the Illinois Chamber of Commerce, the Illinois AFL-CIO, the Illinois Manufacturers' Association, and others, Industry Subcouncils have been formed to review, approve and promote occupational skill standards and credentialing systems. The Industry Subcouncils are Agriculture and Natural Resources; Applied Science and Engineering*; Business and Administrative Information Services; Communications/Information Technology; Construction*; Education and Training Services*; Energy and Utilities*; Financial Services; Health and Social Services; Hospitality; Legal and Protective Services*; Manufacturing; Marketing and Retail Trade; and Transportation, Distribution and Logistics. (*Subcouncils currently being formed.)

The Standards Development Committees, composed of business, labor and education representatives, are experts in the related occupational cluster and work with the product developer to

- Develop or validate occupational skill standards;
- Identify related academic skills;
- Develop or review assessment or credentialing approaches; and
- Recommend endorsement of the standards and credentialing system to the industry subcouncil.

Expected Benefits for Employers, Educators, Students and Workers

Occupational skill standards and credentialing systems are being developed and promoted by the IOSSCC to improve Illinois' competitiveness. Such standards and credentialing systems provide a common language for employers, workers, students and education and training providers to communicate skill requirements and quality expectations for all major industry and occupational areas.

For Employers, skill standards will

- Improve employee recruitment and retention by more clearly identifying skill requirements;
- Encourage improved responsiveness and performance of education and training providers;
- Enlarge the pool of skilled workers; and
- Focus attention on the importance of training investment.

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For Education and Training Providers, skill standards will

- Provide information on all major industries and occupations;
- Contribute to program and curriculum development;
- Strengthen relationships between educators and training providers; and
- Improve career planning.

For Students and Workers, skill standards will

- Foster better decision making concerning careers and the training necessary to acquire well-paying jobs;
- Allow more effective communication with employers about what they know and can do; and
- Allow more effective work with employers in career development and skill upgrading.

IOSSCC Requirements for Occupational Skill Standards

Any occupational skill standards and credentialing system seeking IOSSCC endorsement must

- Represent an occupation or occupational cluster that meets the criteria for IOSSCC endorsement;
- Address both content and performance standards for critical work functions and activities for an occupation or occupational area;
- Ensure formal validation and endorsement by a representative group of employers and workers within an industry;
- Provide for review, modification and revalidation by an industry group a minimum of once every five years;
- Award credentials based on assessment approaches that are supported and endorsed by the industry and consistent with nationally recognized guidelines for validity and reliability;
- Provide widespread access and information to the general public in Illinois; and
- Include marketing and promotion by the industry in cooperation with the partner state agencies.

Definitions and Endorsement Criteria

The definitions and endorsement criteria are designed to promote the integration of existing and future industry-recognized standards, as well as the integration of the Illinois academic and occupational skill standards. Because all skill standards must address the critical work functions and activities for an occupation or industry/occupational area, the Council further defined three major components:

- ***Conditions of Performance:*** The information, tools, equipment and other resources provided to a person for a work performance.
- ***Statement of Work:*** A description of the work to be performed by a person.
- ***Performance Criteria:*** The criteria used to determine the required level of performance. These criteria could include product characteristics (e.g., accuracy levels, appearance), process or procedural requirements (e.g., safety, standard professional procedures) and time and resource requirements.

The IOSSCC is currently working with the Illinois State Board of Education and other state agencies to integrate the occupational standards with the Illinois Learning Standards which describe what students should know and be able to do as a result of their education. The Council is also working to integrate workplace skills—problem solving, critical thinking, teamwork, etc.—with both the Learning Standards and the Occupational Skill Standards.

The Illinois Model

Illinois Occupational Skill Standards describe what people should know and be able to do and how well these skills and knowledge will be demonstrated in an occupational setting. They focus on the most critical work performances for an occupation or occupational area. As seen in the following model, Illinois Occupational Skill Standards contain at least these areas:

- Performance Area
- Performance Skill
- Skill Standard
- Performance Elements
- Performance Assessment Criteria

Illinois Occupational Skill Standards also carry a coding at the top of each page identifying the state, fiscal year in which standards were endorsed, subcouncil abbreviation, cluster abbreviation and standard number. For example, the twenty-fifth skill standard in the Row Crop Production Cluster, which has been developed by the Agriculture and Natural Resources Subcouncil, would carry the following coding: IL.00.ANR.RCP.25.

A model for Illinois Occupational Skill Standards showing the placement of the coding and providing a description of each area within a standard is contained on the following page.

SUMMARY OF WORK TO BE PERFORMED. SUMMARY IS BRIEF AND BEGINS WITH AN ACTION VERB.

IL.FY.SUBCOUNCIL. CLUSTER. STANDARD NO.

PERFORMANCE AREA

SKILL STANDARD

CONDITIONS OF PERFORMANCE

A comprehensive listing of the information, tools, equipment and other resources provided to the person(s) performing the work.

WORK TO BE PERFORMED

An overview of the work to be performed in demonstrating the performance skill standard. This overview should address the major components of the performance. The detailed elements or steps of the performance are listed under "Performance Elements."

PERFORMANCE CRITERIA

The assessment criteria used to evaluate whether the performance meets the standard. Performance criteria specify product/outcome characteristics (e.g., accuracy levels, appearance, results, etc.) and process or procedure requirements (e.g., safety requirements, time requirements, etc.).

PERFORMANCE ELEMENTS

Description of the major elements or steps of the overall performance and any special assessment criteria associated with each element.

PERFORMANCE ASSESSMENT CRITERIA

Listing of required testing, certification and/or licensing.

Product and process used to evaluate the performance of the standard.

PRODUCT

Description of the product resulting from the performance of the skill standard.

PROCESS

Listing of steps from the Performance Elements which must be performed or the required order or performance for meeting the standard.

DEVELOPMENTAL PROCESS

After reviewing current labor market information and considering the fact that the row crop production occupational cluster will need a steady supply of replacement workers, the Agriculture and Natural Resources Subcouncil recommended that this occupational cluster be developed. Careers in this cluster include the full range of crop production workers from the owner/operator of a family farm to the range of workers in and around corporate farming operations. This cluster meets the criteria for development established by the Illinois Occupational Skill Standards Credentialing Council (IOSSCC).

A product developer knowledgeable about agricultural occupations began the process of performance skill identification. Given the range within several occupations, the initial charge for the product developer was to prepare a set of skills that would address the major work areas in any workplace. This framework sets the boundaries for addressing skill performances required by the row crop production area.

Resources used included job descriptions from the *Dictionary of Occupational Titles* and the crop production industry; competencies addressed in secondary and post-secondary programs; and V-TECS materials and Illinois task lists previously developed.

The Standards Development Committee was composed of workers from all levels within the row crop production cluster. The framework and initial outline of performance skills were addressed and reviewed at an initial meeting. During this time the work titles and skill matrix were accepted and the skill standards were reviewed and revisions suggested. Additional meetings took place and the skill standards, occupational titles and matrix were reviewed and then accepted by the Standards Development Committee. The Agriculture and Natural Resources Subcouncil reviewed and approved the cluster.

Performance elements were developed using industry standards. The skill standards outline performance elements expected in the workplace. These standards may serve as an assessment/evaluation tool and workplace guide.

A set of skill standards was provided to the Agriculture and Natural Resources Subcouncil. Comments were solicited from the Subcouncil members as well as from other interested reviewers. Suggestions were incorporated into the final product.

The Subcouncil recommended the final skill standards product be presented to the IOSSCC. The IOSSCC reviewed the skill standards and met with the product developer, state liaison, chair of the Subcouncil and other industry leaders. Based on the review, the IOSSCC voted to endorse the Row Crop Production Cluster skill standards, recognizing the occupation of Row Crop Worker.

ASSUMPTIONS FOR ROW CROP PRODUCTION CLUSTER STANDARDS

Skill standards statements assume:

1. Workplace skills (employability skills) are expected of all individuals. Socialization skills needed for work are related to lifelong career experience and are not solely a part of the initial schooling process. These are not included with this set of statements.
2. Specific policies and procedures of the work-site will be made known to the individual and will be followed.
3. Time elements outlined for the skill standards result from the experience and consideration of the panel of experts who made up the Standards Development Committee.
4. Skills will progress from simple to complex. Once a skill has been successfully performed, it will be incorporated into more complex skills.
5. Skill standards describe the skill only and do not detail the background knowledge or theory related to the particular skill base. Although the skill standard enumerates steps to successful demonstration, rote approaches to the outcomes are not prescribed.
6. The rights of individuals will be known to the row crop producers as part of their educational process and will be respected and expected as part of employment.
7. Skills are to be accomplished by a "work environment" check that would leave the work-site neat and clean and a safe place in which to live and work. This complies with OSHA, EPA and WPS standards and regulations.
8. Equipment required for skill performance has been inspected and delivered to the field ready for operation.
9. Individuals operating tractors and other equipment have received training and are experienced operators.
10. Soil analysis reports will be used as a guide for production planning.

TABLE OF CONTENTS

Accident and Emergency Procedures	Maximize Farm Safety	1
	Follow Accident/Incident Response Procedures	3
	Submit Accident and Insurance Reports and Claims	5
Operate Equipment	Chisel Plow or Rip a Field	7
	Disc/Field Cultivate a Row Crop Field	9
	Spray a Row Crop Field with Pesticides	11
	Plant a Row Crop	13
	Apply Liquid Fertilizer	15
	Apply Dry Fertilizer	17
	Row Cultivate a Field	19
	Harvest a Row Crop	21
	Apply Anhydrous Ammonia	23
Repair Equipment in the Field	Replace a Chisel Plow Shank	25
	Replace a Disc Blade	27
	Replace or Clean a Spray Nozzle	29
	Clear a Clogged Dry Chemical Applicator	31
	Repair or Replace Planter Chain	33
	Replace a Damaged Belt	35
Crop Handling	Load Row Crop Grain	37
	Transport Row Crop Grain to a Storage Facility	39
	Unload a Row Crop Grain	41
	Maintain On-site Storage of Row Crop Grain	43
	Segregate Row Crop Grain	45
Crop Planning and Production	Read Map and Follow Instructions	47
	Maintain a Grass Waterway	48
	Maintain a Tile Drainage System	50
	Scout a Row Crop Field	52
	Process Waste and Recyclables	54
Row Crop Production Management	Maintain Workforce	56
	Inform and Motivate Employees	58
	Supervise Employees	60
	Plan Row Crop Production	62
	Schedule Equipment and Facilities	64
	Develop a Row Crop Marketing Plan	66
	Interpret Performance Data of the Row Crop Production Business	68
	Global Positioning Satellite (GPS) Map Interpretation	70

PERFORMANCE SKILL LEVELS

	ROW CROP WORKER	ROW CROP PRODUCER	ROW CROP MANAGER	OWNER
ACCIDENT AND EMERGENCY PROCEDURES				
Maximize Farm Safety			•	•
Follow Accident/Incident Response Procedures			•	•
Submit Accident and Insurance Reports and Claims			•	•
OPERATE EQUIPMENT				
Chisel Plow or Rip a Field	•	•		•
Disc/Field Cultivate a Row Crop Field	•	•		•
Spray a Row Crop Field with Pesticides	•	•		•
Plant a Row Crop	•	•		•
Apply Liquid Fertilizer	•	•		•
Apply Dry Fertilizer	•	•		•
Row Cultivate a Field	•	•		•
Harvest a Row Crop	•	•		•
Apply Anhydrous Ammonia	•	•		•
REPAIR EQUIPMENT IN THE FIELD				
Replace a Chisel Plow Shank	•	•		•
Replace a Disc Blade	•	•		•
Replace or Clean a Spray Nozzle	•	•		•
Clear a Clogged Dry Chemical Applicator	•	•		•
Repair or Replace Planter Chain	•	•		•
Replace a Damaged Belt	•	•		•
CROP HANDLING				
Load Row Crop Grain	•	•	•	•
Transport Row Crop Grain to a Storage Facility	•	•	•	•
Unload a Row Crop Grain	•	•	•	•
Manage On-site Storage of Row Crop Grain		•	•	•
Segregate Row Crop Grain			•	•

PERFORMANCE SKILL LEVELS

CROP PLANNING AND PRODUCTION)	ROW CROP WORKER	ROW CROP PRODUCER	ROW CROP MANAGER	OWNER
Read Map and Follow Instruction	•	•	•	•
Maintain a Grass Waterway		•	•	•
Maintain a Tile Drainage System		•	•	•
Scout a Row Crop Field		•	•	•
Process Waste and Recyclables		•	•	•
ROW CROP PRODUCTION MANAGEMENT				
Maintain Workforce			•	•
Inform and Motivate Employees			•	•
Supervise Employees			•	•
Plan Row Crop Production			•	•
Schedule Equipment and Facilities			•	•
Develop a Row Crop Marketing Plan			•	•
Interpret Performance Data of the Row Crop Production Business			•	•
Global Positioning Satellite (GPS) Map Interpretation	•	•	•	•

MAXIMIZE FARM SAFETY.

ACCIDENT AND EMERGENCY PROCEDURES

SKILL STANDARD

CONDITIONS OF PERFORMANCE

Given the following:

- Safety equipment and systems
- Safety materials and training
- Safety checklists with standard operating policy and procedures
- Material Safety Data Sheets (MSDS)
- Chemical storage and labeling policy and procedures
- Safety storage areas
- Safety signage
- Safety log
- Property forms (e.g., safety status checklist, safety violation, work order, etc.)
- First aid kit
- Disaster drill policy and procedures
- Emergency evacuation plans
- Local, state and federal regulations
- Annual Occupational Safety and Health Administration (OSHA) log of work-related employee injuries and illnesses (OSHA Log No. 200)

WORK TO BE PERFORMED

Maximize farm safety by identifying and eliminating potential safety hazards.

PERFORMANCE CRITERIA

All safety hazards that can cause injury or accidents are eliminated. Safety violations are reported to designated person and safety violation documentation is completed.

The skill is performed with 100% accuracy.

All breaches of safety are reported immediately. Identification of potential safety hazards is ongoing.

PERFORMANCE ELEMENTS

1. Post emergency plan folders for all equipment and chemicals.
2. Post appropriate clothing list for operating equipment.
3. Clean up all spills in accordance with EPA regulations.
4. Remove all objects or spills located where they could cause injury or damage.

5. Maintain appropriate fire extinguishers and fire protection equipment according to NFPA standards.
   a. Check expiration dates on fire extinguishers.
   b. Maintain fire protection equipment according to NFPA standards.
   c. Ensure authorized service center maintains fire extinguishers yearly (e.g., recharging).
6. Store combustible materials away from ignition sources.
7. Store caustic or poisonous substances in identified storage areas.
8. Ensure required material safety data sheets are updated and easily accessible.
9. Ensure all equipment is maintained according to manufacturers' specifications.
10. Maintain evacuation equipment (e.g., flashlights, light sticks, blankets).
11. Maintain first aid kit supplies.
12. Report all safety violations to designated person.

PERFORMANCE ASSESSMENT CRITERIA

OSHA and EPA standards/regulations are followed.

PRODUCT

All safety hazards are identified and reported to maintenance and/or eliminated. Safety violations are logged and reported to designated staff. Appropriate procedures for extreme weather conditions are followed.

PROCESS

All performance elements for maximizing farm safety are critical.

FOLLOW ACCIDENT/INCIDENT RESPONSE PROCEDURES.

SKILL STANDARD

CONDITIONS OF PERFORMANCE

Given the following:

Property accident/incident response policy and procedures
Accident/incident-specific checklists
First aid kit
Telephone
Accident report and logbook
Incident report and logbook
Disaster policy and procedures
Emergency call lists for

medical services	management personnel
police departmer	emergency response team
fire department	ambulance services

WORK TO BE PERFORMED

Follow accident/incident response procedures.

PERFORMANCE CRITERIA

All accidents/incidents are reported to designated individual. Details of all accidents/incidents are logged and documented.

The skill is performed with 100% accuracy.

Time required to complete the skill varies depending on the information required for documentation and the type of accident/incident.

PERFORMANCE ELEMENTS

1. Assess accident/incident situation.
2. Determine seriousness of accident/incident.
3. Call emergency personnel if necessary.
4. Assist individual by most appropriate means.
5. Establish individual communication checkpoints as required.
6. Direct individuals to appropriate safe areas as required.
7. Report accident/incident to designated individual(s) or entity (e.g., worker's compensation, insurance, etc.).
8. Complete accident/incident documentation.

PERFORMANCE ASSESSMENT CRITERIA

All insurance, local, state and federal regulations are followed.

PRODUCT

All accident/incident reports and logs are completed and reported to designated individual or entity. Emergency personnel are contacted as required.

PROCESS

All performance elements for following accident/incident response policy and procedures are critical. Performance element 2 is critical for determining which accident/incident response procedure(s) must be followed and who should be contacted.

SUBMIT ACCIDENT AND INSURANCE REPORTS AND CLAIMS.

SKILL STANDARD

CONDITIONS OF PERFORMANCE

Given the following:

Workplace policy and procedures
Insurance standards/regulations
Insurance report and claim forms
Accident report and logbook
Emergency call lists
Local, state and federal laws and regulations

WORK TO BE PERFORMED

Submit accident reports and claims to employer and insurance company.

File reports and claims according to company policy and procedures.

PERFORMANCE CRITERIA

All accident reports and claims are submitted to the insurance company and filed according to the insurance company's policy and procedures.

Complete all necessary forms within 24 hours.

PERFORMANCE ELEMENTS

1. Notify police or emergency personnel and give details of accident/incident.
2. Report accidents to supervisor immediately.
3. Prepare accident reports and claims.
4. Complete supporting documentation (e.g., drug test for CDL licensed driver, etc.).
5. Submit completed forms to the insurance company.
6. File completed forms.

PERFORMANCE ASSESSMENT CRITERIA

Local, state and federal laws are followed.

PRODUCT

Accident reports are prepared and submitted to employer and insurance company as required. Completed forms are filed accordingly.

PROCESS

The performance elements are numbered to show appropriate sequence for completing the skill; however, a different sequence may be used.

CHISEL PLOW OR RIP A FIELD.

SKILL STANDARD

CONDITIONS OF PERFORMANCE

Given the following:

Tractor
Chisel plow
Twenty-acre field
Tillage depth specifications
Crop residue determination
Manufacturer's service and operating manual(s)
Toolbox (Appendix A)
Occupational Safety & Health Administration (OSHA) standards/regulations

WORK TO BE PERFORMED

Chisel plow or rip a 20-acre field.

PERFORMANCE CRITERIA

Grass, weeds and crop residue are uprooted and incorporated into the soil to the specified tillage depth.

Time required to complete the skill varies with the type of terrain, shape of field, soil, specified depth and equipment.

(Example: A 20-acre field is completed using a 15-foot chisel plow, with adjusted depth, operated at 5 miles per hour in 2 1/2 to 3 hours, depending on the amount of crop residue and soil condition.)

PERFORMANCE ELEMENTS

1. Perform periodic representative checks to determine if accurate depth and angle of chisel is being used.
2. Adjust machinery after periodic check.
3. Complete chisel plowing as assigned.
4. Identify field conditions and report back to supervisor.

PERFORMANCE ASSESSMENT CRITERIA

OSHA standards/regulations are followed.

PRODUCT

The field is chisel plowed to achieve the desired depth and residue cover.

PROCESS

The performance elements are numbered to show an appropriate sequence for completing the skill; however, a different sequence may be used.

DISC/FIELD CULTIVATE A ROW CROP FIELD.

SKILL STANDARD

CONDITIONS OF PERFORMANCE

Given the following:

Tractor
Disc
Twenty-acre field
Tillage depth specifications
Crop residue determination
Manufacturer's service and operating manual(s)
Toolbox (Appendix A)
Occupational Safety & Health Administration (OSHA) standards/regulations

WORK TO BE PERFORMED

Disc/field cultivate a twenty-acre row crop field.

PERFORMANCE CRITERIA

Grass, weeds and crop residue are uprooted and incorporated into the soil to the specified tillage depth.

Time required to complete the skill varies with the type and condition of the field.

(Example: Twenty acres is disced and leveled using a 21-foot tandem disc, with the proper angle to the desired depth, in 1 1/2 to 2 hours.)

PERFORMANCE ELEMENTS

1. Adjust depth of disc.
2. Adjust disc for level operation.
3. Perform periodic checks to determine if specified depth is being achieved.
4. Complete discing acreage as assigned.
5. Identify field conditions and report findings.

PERFORMANCE ASSESSMENT CRITERIA

OSHA standards/regulations are followed.

PRODUCT

The field is disced, up-rooting grass and weeds to achieve desired conditions. (Spring statement)

The field is disced, cutting crop residue and incorporating fertilizer to achieve desired conditions. (Fall statement)

PROCESS

The performance elements are numbered to show an appropriate sequence for completing the skill; however, a different sequence may be used.

SPRAY A ROW CROP FIELD WITH PESTICIDES.

SKILL STANDARD

CONDITIONS OF PERFORMANCE

Given the following:

- Tractor
- Pesticide application equipment
- Pesticide
- Ground speed spray controller
- Calibrated sprayer equipped with proper nozzles
- Application rates
- Application logbook
- Material Safety Data Sheets (MSDS)
- Row crop (soybeans, corn)
- Twenty-acre field
- Current and forecast weather reports
- Pesticide applicator license (must be 18 years of age)
- Information on targeted pests to be controlled
- Pesticide product labels
- Manufacturer's service and operating manual(s)
- Toolbox (Appendix A)
- Personal protective equipment (PPE)
- Emergency plan (e.g., spills)
- Occupational Safety & Health Administration (OSHA) standards/regulations
- Environmental Protection Agency (EPA) standards/regulations
- Worker Protection Standards (WPS) standards/regulations

WORK TO BE PERFORMED

Spray a 20-acre row crop field with pesticides.

PERFORMANCE CRITERIA

The pesticides are applied to the correct field at the specified rate, with a less than 5% error rate.

Time required to complete the skill varies depending on the type of terrain, shape of the field and equipment.

(Example: A 20-acre field is completed using a 30-foot boom sprayer, operated at an appropriate speed, in 45 minutes to 1 hour.)

PERFORMANCE ELEMENTS

1. Have plan explained or discussed for emergencies, specifically spill plan.
2. Assess field layout for spray application of herbicides or insecticides that will allow for most efficient use of equipment and products to apply a uniform application.
3. Don PPE.
4. Load sprayer according to label standards/regulations.
5. Identify changing weather conditions and take appropriate action.
6. Determine appropriate pesticide coverage has been applied.
7. Adjust and calibrate appropriate equipment according to recommended guidelines.
8. Identify sprayer conditions and report findings back to supervisor.
9. Complete spray application.
10. Complete application logbook and return it to supervisor.
11. Remove excess pesticides from sprayer and dispose according to product label guidelines.
12. Prepare sprayer for next application, according to guidelines.

PERFORMANCE ASSESSMENT CRITERIA

OSHA, EPA and WPS standards/regulations are followed.

Pesticide licenses are required for chemical application.

PRODUCT

The specified rate of pesticide is applied to the row crop field.

PROCESS

All performance elements for spraying a row crop field with pesticides are critical and must be performed in sequence.

SKILL STANDARD

CONDITIONS OF PERFORMANCE

Given the following:

- Tractor
- Planter/drill equipped with calibrated application equipment
- Global Positioning Satellite (GPS) equipment
- Application job map
- Application logbook
- Material Safety Data Sheets (MSDS)
- Row crop seed (soybeans, corn)
- Fertilizer
- Pesticide
- Product labels
- Seeding rate calculations
- Fertilizer rate calculations
- Pesticide rate calculations
- Twenty-acre field prepared for planting
- Manufacturers' service and operating manual(s)
- Toolbox (Appendix A)
- Personal protective equipment (PPE)
- Occupational Safety & Health Administration (OSHA) standards/regulations
- Environmental Protection Agency (EPA) standards/regulations
- Worker Protection Standards (WPS) standards/regulations

WORK TO BE PERFORMED

Plant a 20-acre field with row crop seed and apply fertilizer.

Note: Pesticide and fertilizer application may/may not be assigned as part of the skill performance.

PERFORMANCE CRITERIA

The equipment is operated to deliver the specified seed, fertilizer, and pesticide rate, with less than 5% error.

Time required to complete the skill varies with the type of terrain, equipment, shape of the field, condition of the soil and crop residue.

(Examples: A 20-acre field is planted using an 8-row planter, with 30-inch rows in 1 ½ to 2 hours with a less than 5% error. A 20-acre no-till field is planted using a 15-foot drill in 2 ½ to 3 hours with a less than 5% error.)

PERFORMANCE ELEMENTS

1. Adjust and calibrate equipment according to recommended guidelines.
2. Don PPE.
3. Load hopper(s).
4. Load fertilizer and pesticides in appropriate containers.
5. Start GPS application job.
6. Periodically verify planting depth and number of seeds per acre.
7. Adjust depth/number of seeds/acres accordingly.
8. Complete acreage.
9. Complete GPS application job map and return it to supervisor.
10. Complete logbook and return it to supervisor.
11. Remove excess pesticides, seed and fertilizer from equipment and dispose according to product label guidelines.
12. Dispose of used containers according to MSDS sheets for the selected seed treatment.

PERFORMANCE ASSESSMENT CRITERIA

OSHA, EPA and WPS standards/regulations are followed.

PRODUCT

The field is planted to the specified seed rate as assigned.

PROCESS

All performance elements for planting a row crop are critical and must be performed in sequence.

APPLY LIQUID FERTILIZER.

SKILL STANDARD

CONDITIONS OF PERFORMANCE

Given the following:

Tractor and sprayer or appropriate application machine
Ground speed spray controller
Global Positioning Satellite (GPS) equipment
Calibrated sprayer
Personal protective equipment (PPE)
Liquid fertilizer
Emergency plan (e.g., spills)
Machine capacity specifications
Fertilizer application rates
Twenty-acre field
Application job map
Application logbook
Material Safety Data Sheets (MSDS)
Product labels
Manufacturer's service and operating manual(s)
Toolbox (Appendix A)
Occupational Safety & Health Administration (OSHA) standards/regulations
Environmental Protection Agency (EPA) standards/regulations
Worker Protection Standards (WPS) standards/regulations

Note: Applicator's license is needed only if pesticide is mixed with fertilizer.

WORK TO BE PERFORMED

Spray a 20-acre row crop field with liquid fertilizer.

PERFORMANCE CRITERIA

Liquid fertilizer is applied to the designated field at the specified rate, with a less than 5% error rate.

Time required to complete the skill varies with the type of equipment, terrain, shape of the field, and condition of the field.

(Example: The application on a 20-acre field, using a 60-foot boom, is completed in 40 to 60 minutes.)

PERFORMANCE ELEMENTS

1. Have plan explained or discussed for emergencies, specifically spill plan.
2. Complete field layout for fertilizer application that will allow for most efficient use of equipment to apply a uniform application.
3. Don PPE.
4. Load sprayer.
5. Start GPS job application.
6. Adjust and calibrate equipment according to recommended guidelines.
7. Perform test run and re-adjust calibration if needed.
8. Complete application.
9. Record application rate and the amount in a logbook and return it to the supervisor.
10. Complete GPS application job map and return it to supervisor.
11. Remove excess fertilizer from the sprayer and dispose according to product label guidelines.
12. Prepare sprayer for next application, according to guidelines.
13. Dispose of used containers according to MSDS sheets for the selected seed treatment.

PERFORMANCE ASSESSMENT CRITERIA

OSHA, EPA and WPS standards/regulations are followed.

PRODUCT

The specified rate of liquid fertilizer is applied to the field.

PROCESS

All performance elements for applying liquid fertilizer are critical and must be performed in sequence.

APPLY DRY FERTILIZER.

SKILL STANDARD

CONDITIONS OF PERFORMANCE

Given the following:

Dry fertilizer application equipment
Ground speed material application controller
Global Positioning Satellite (GPS) equipment
Application job map
Application logbook
Dry fertilizer
Personal protective equipment (PPE)
Fertilizer analysis report
Twenty-acre field
Fertilizer application rates
Manufacturer's service and operating manual(s)
Toolbox (Appendix A)
Occupational Safety & Health Administration (OSHA) standards/regulations
Environmental Protection Agency (EPA) standards/regulations
Worker Protection Standards (WPS) standards/regulations

Note: Applicator's license is needed only if pesticide is mixed with fertilizer.

WORK TO BE PERFORMED

Apply dry fertilizer to a 20-acre field.

PERFORMANCE CRITERIA

Dry fertilizer is applied to the correct field at the specified rate, with a less than 5% error rate.

Time required to complete the skill varies with the type of terrain, shape of the field and type of equipment used.

(Example: Application on a 20-acre field is completed in 30 to 40 minutes.)

PERFORMANCE ELEMENTS

1. Complete field layout for fertilizer application that will allow for the most efficient use of equipment and products to apply a uniform application.
2. Don PPE.
3. Load spreader according to guidelines.
4 Start GPS application job.

5. Verify accurate application is being achieved.
6. Re-adjust and calibrate equipment according to recommended guidelines, if needed.
7. Complete application.
8. Complete GPS application job map and return it to supervisor.
9. Complete application logbook and return it to supervisor.
10. Dispose of used containers according to MSDS sheets for the selected seed treatment.

PERFORMANCE ASSESSMENT CRITERIA

OSHA, EPA and WPS standards/regulations are followed.

PRODUCT

Dry fertilizer is applied at the specified rate.

PROCESS

All performance elements for applying dry fertilizer to the field are critical and must be performed in sequence.

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ROW CULTIVATE A FIELD.

SKILL STANDARD

CONDITIONS OF PERFORMANCE

Given the following:

Tractor
Row cultivator
Twenty-acre field
Tillage depth specifications
Weed cover instructions
Manufacturer's service and operating manual(s)
Toolbox (Appendix A)
Occupational Safety & Health Administration (OSHA) standards/regulations

WORK TO BE PERFORMED

Row cultivate a 20-acre field.

PERFORMANCE CRITERIA

The soil is broken to the specified depth without damage to the crop. Grass and weeds are uprooted and covered with soil.

Time required to complete the skill varies with the type of terrain, shape of the field, soil conditions, equipment and the size of the crop being cultivated.

(Example: A 20-acre field is cultivated, using an 8-row cultivator, in 1 hour 30 minutes.)

PERFORMANCE ELEMENTS

1. Perform test run.
2. Verify soil is cultivated to specified depth and desired weed control is achieved.
3. Adjust depth of cultivator.
4. Complete field.
5. Identify field conditions and report back to supervisor.

PERFORMANCE ASSESSMENT CRITERIA

OSHA standards/regulations are followed.

PRODUCT

The field is cultivated, uprooting grass and weeds, without damage to the crop.

PROCESS

The performance elements are numbered to show an appropriate sequence for completing the skill.

HARVEST A ROW CROP.

SKILL STANDARD

CONDITIONS OF PERFORMANCE

Given the following:

Calibrated and adjusted combine with appropriate grain head
Global Positioning Satellite (GPS) equipment
Harvest job map
Harvest logbook
Twenty-acre row crop field
Mature row crop suitable for harvest
Grain transport vehicle (e.g., truck, hopper, grain wagon)
Manufacturer's service and operating manual(s)
Toolbox (Appendix A)
Occupational Safety & Health Administration (OSHA) standards/regulations

WORK TO BE PERFORMED

Harvest a 20-acre row crop field.

PERFORMANCE CRITERIA

The row crop field is harvested with a crop loss of less than 2% per acre.

Time required to complete the skill varies with the type of equipment used, shape of the field, condition of the crop, condition of the field and size of the field.

(Example: A 20-acre row crop is harvested, using an 8-row combine at 4.8 MPH, in 2 to 3 hours.)

PERFORMANCE ELEMENTS

1. Adjust and calibrate the equipment according to the manual(s).
2. Start the GPS job.
3. Complete a test run.
4. Walk harvested area of the field to observe machine and header loss.
5. Make appropriate adjustments to minimize crop loss.
6. Continue to harvest.
7. Off load to a grain transport vehicle.
8. Repeat steps 4 through 7 until the field is harvested.
9. Complete the GPS job-map and return it to the supervisor.
10. Complete the logbook and return it to the supervisor.
11. Prepare equipment for next harvest location following manufacturers' guidelines, if applicable.

PERFORMANCE ASSESSMENT CRITERIA

OSHA standards/regulations are followed.

PRODUCT

The row crop is harvested with minimal crop loss and off loaded to the transport vehicle.

PROCESS

All performance elements for harvesting a row crop are critical and must be performed in sequence.

APPLY ANHYDROUS AMMONIA.

SKILL STANDARD

CONDITIONS OF PERFORMANCE

Given the following:

Anhydrous ammonia applicator
Global Positioning Satellite (GPS) equipment
Application job map
Application logbook
Calibrated ground speed anhydrous controller
Toolbox (Appendix A)
Personal protective equipment (PPE) MANDATORY
Water supply for first aid
Anhydrous ammonia/nurse tank
Anhydrous Ammonia application rates
Twenty-acre field
Manufacturer's service and operating manual(s)
Occupational Safety & Health Administration (OSHA) standards/regulations
Environmental Protection Agency (EPA) standards/regulations
Worker Protection Standards (WPS) standards/regulations

WORK TO BE PERFORMED

Apply anhydrous ammonia to a 20-acre field.

PERFORMANCE CRITERIA

Anhydrous ammonia is applied to the designated field at the specified rate, with a less than 2% error rate.

Time required to complete the skill varies with the type of equipment used, terrain, shape of the field and condition of the field.

(Example: A fall application on 20 acres is completed, using a 32-foot toolbar, in 1½ - 2 hours.)

PERFORMANCE ELEMENTS

NOTE: SERIOUS INJURY WILL OCCUR IF PERFORMANCE ELEMENTS ARE NOT PERFORMED IN SEQUENCE.

PPE IS MANDATORY FOR THIS SKILL PERFORMANCE.

1. Don PPE.
2. Connect nurse tank.
3. Verify tank pressure.
4. Start GPS application job.
5. Complete field layout for anhydrous ammonia application that will allow for most efficient use of equipment to apply a uniform application.
6. Determine if accurate coverage is being achieved.
7. Adjust and calibrate equipment according to manufacturers' specifications, as necessary.
8. Complete application.
9. Complete GPS application job map and return it to supervisor.
10. Complete logbook and return it to supervisor.
11. Disconnect nurse tank.
12. Drain system for next application according to OSHA/EPA standards/regulations.

PERFORMANCE ASSESSMENT CRITERIA

OSHA, EPA and WPS standards/regulations are followed.

PRODUCT

Anhydrous ammonia is applied to the designated field.

PROCESS

All performance elements for applying anhydrous ammonia are critical and must be performed in sequence.

REPLACE A CHISEL PLOW SHANK.

SKILL STANDARD

CONDITIONS OF PERFORMANCE

Given the following:

Chisel plow
Damaged chisel plow shank
Replacement chisel plow shank
Manufacturer's service and operating manual(s)
Equipment lockup (transport) placement instructions
Toolbox (Appendix A)
Occupational Safety & Health Administration (OSHA) standards/regulations

WORK TO BE PERFORMED

Replace a damaged chisel plow shank.

PERFORMANCE CRITERIA

The damaged shank is removed and replaced with a new shank and adjusted according to the manufacturer's specifications.

Time required to replace a shank is 10 minutes.

PERFORMANCE ELEMENTS

1. Identify damaged shank.
2. Select appropriate tools from toolbox.
3. Follow recommended safety regulations when working on or under farm equipment.
4. Remove damaged shank according to manufacturers specifications.
5. Install replacement shank according to manufacturer's specifications.
6. Verify that shank is ready for operation.
7. Perform test run.
8. Inspect shank and re-tighten nuts and bolts, as necessary.

PERFORMANCE ASSESSMENT CRITERIA

OSHA standards/regulations are followed.

PRODUCT

The chisel plow shank is replaced and adjusted.

PROCESS

All performance elements for replacing a damaged plow shank are critical and must be performed in sequence.

REPLACE A DISC BLADE.

SKILL STANDARD

CONDITIONS OF PERFORMANCE

Given the following:

Disc
Damaged disc blade
Replacement disc blade
Manufacturer's service and operating manual(s)
Toolbox (Appendix A)
Occupational Safety & Health Administration (OSHA) standards/regulations

WORK TO BE PERFORMED

Replace a damaged disc blade.

PERFORMANCE CRITERIA

The damaged disc blade is removed and replaced with a new disc blade and adjusted according to the manufacturer's specifications.

Time required to replace a disc blade varies depending on the type of disc and location of the damaged disc.

PERFORMANCE ELEMENTS

1. Identify damaged disc blade.
2. Select appropriate tools from toolbox.
3. Follow recommended safety procedures when working around and under farm equipment.
4. Prepare equipment for dismantling.
5. Remove damaged disc blade according to specifications.
6. Install new disc blade according to specifications.
7. Verify that disc blade is ready for operation.
8. Perform test run.
9. Inspect disc blade and re-tighten blade, as necessary.

PERFORMANCE ASSESSMENT CRITERIA

OSHA standards/regulations are followed.

PRODUCT

The damaged disc blade is removed and replaced.

PROCESS

All performance elements for replacing a damaged disc blade are critical and must be performed in sequence.

REPLACE OR CLEAN A SPRAY NOZZLE.

SKILL STANDARD

CONDITIONS OF PERFORMANCE

Given the following:

Sprayer
Clogged or damaged spray nozzle
Replacement spray nozzle
Spray logbook
Manufacturer's service and operating manual(s)
Material Safety Data Sheets (MSDS)
Personal protective equipment (PPE)
Toolbox (Appendix A)
Occupational Safety & Health Administration (OSHA) standards/regulations
Environmental Protection Agency (EPA) standards/regulations
Worker Protection Standards (WPS) standards/regulations

WORK TO BE PERFORMED

Replace or clean a spray nozzle.

PERFORMANCE CRITERIA

The damaged or clogged nozzle is cleaned or replaced.

Time required to clean or replace a damaged nozzle varies depending on the type of equipment being used.

PERFORMANCE ELEMENTS

1. Identify damaged or clogged spray nozzle.
2. Check spray log to determine what product is in the load.
3. Select appropriate tools from toolbox.
4. Don PPE.
5. Remove damaged or clogged spray nozzle.
6. Replace damaged or clogged spray nozzle.
7. Adjust and calibrate spray nozzle according to manufacturer's standards/regulations.
8. Verify calibration of spray nozzle.

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PERFORMANCE ASSESSMENT CRITERIA

OSHA, EPA and WPS standards/regulations are followed.

PRODUCT

The sprayer nozzle is removed, cleaned or replaced and adjusted.

PROCESS

All performance elements for replacing a clogged or damaged spray nozzle are critical and must be performed in sequence.

CLEAR A CLOGGED DRY CHEMICAL APPLICATOR.

SKILL STANDARD

CONDITIONS OF PERFORMANCE

Given the following:

Dry chemical applicator
Manufacturer's service and operating manual(s)
Material Safety Data Sheets (MSDS)
Toolbox (Appendix A)
Occupational Safety & Health Administration (OSHA) standards/regulations
Environmental Protection Agency (EPA) standards/regulations
Worker Protection Standards (WPS) standards/regulations

WORK TO BE PERFORMED

Clear a clogged dry chemical applicator.

PERFORMANCE CRITERIA

The dry chemical applicator is cleared of obstacles according to OSHA and EPA standards/regulations.

Time required to complete the skill is 30 minutes.

PERFORMANCE ELEMENTS

1. Identify product that is in the load.
2. Identify clogged applicator.
3. Select appropriate tools from toolbox.
4. Don PPE.
5. Remove clogged applicator.
6. Clean clogged applicator.
7. Install cleaned applicator.
8. Adjust and calibrate applicator according to manufacturer's guidelines.
9. Perform test run.
10. Verify calibration and adjust accordingly.

PERFORMANCE ASSESSMENT CRITERIA

OSHA, EPA and WPS standards/regulations are followed.

PRODUCT

The applicator is clear of all obstacles.

PROCESS

All performance elements critical for clearing a chemical dry applicator are critical and must be performed in sequence.

REPAIR OR REPLACE PLANTER CHAIN.

SKILL STANDARD

CONDITIONS OF PERFORMANCE

Given the following:

Planter
Broken chain
Replacement chain
Appropriate personal protective equipment (PPE)
Manufacturer's service and operating manual(s)
Toolbox (Appendix A)
Occupational Safety & Health Administration (OSHA) standards/regulations

WORK TO BE PERFORMED

Repair or replace a broken planter chain.

PERFORMANCE CRITERIA

The broken chain is repaired or replaced.

The reason for chain failure is evaluated.

Time required to complete the skill varies with the type of equipment used and its condition.

PERFORMANCE ELEMENTS

1. Locate broken chain.
2. Select appropriate tools from toolbox.
3. Don appropriate PPE.
4. Remove broken chain.
5. Repair broken chain according to manufacturer's specifications.
6. Replace chain according to manufacturer's specifications.
7. Adjust chain according to manufacturer's specifications.
8. Verify that chain is ready for operation.
9. Perform test run.
10. Inspect chain to insure it is operating according to manufacturer's specifications.

PERFORMANCE ASSESSMENT CRITERIA

OSHA standards/regulations are followed.

PRODUCT

The planter chain is repaired or replaced.

PROCESS

All performance skills for replacing or repairing a planter chain are critical and must be performed in sequence. Performance element 5 or 6 will be chosen after the damage is inspected.

REPLACE A DAMAGED BELT.

SKILL STANDARD

CONDITIONS OF PERFORMANCE

Given the following:

Farm implements (e.g., tractor, planter, combine, etc.)
Damaged belt
Replacement belt
Personal protective equipment (PPE)
Manufacturer's' service and operating manual(s)
Toolbox (Appendix A)
Occupational Safety & Health Administration (OSHA) standards/regulations

WORK TO BE PERFORMED

Replace a damaged belt.

PERFORMANCE CRITERIA

The damaged belt is identified and replaced according to the manufacturer's specifications.

Time required to complete the skill varies with the type and size of the equipment.

(Example: A belt is replaced on a 180-horsepower tractor in 30 minutes.)

PERFORMANCE ELEMENTS

1. Identify damaged belt.
2. Select appropriate tools.
3. Don PPE.
4. Remove damaged belt.
5. Analyze reason belt was damaged and complete maintenance to prevent future belt damage.
6. Install replacement belt.
7. Adjust belt according to recommended guidelines.
8. Verify that belt is ready for operation.
9. Check belt again after short periods of operation and make necessary adjustments.

PERFORMANCE ASSESSMENT CRITERIA

OSHA standards/regulations are followed.

PRODUCT

The damaged belt is replaced.

PROCESS

All performance elements for replacing a damaged belt are critical and must be performed in sequence.

LOAD ROW CROP GRAIN.

SKILL STANDARD

CONDITIONS OF PERFORMANCE

Given the following:

Pre-trip safety inspection checklist
Loading equipment (e.g., auger, grain truck, cart)
Load/weigh ticket (if applicable)
Vehicle and road weight limitations
Harvested row crop grain
Transport vehicle
Occupational Safety & Health Administration (OSHA) standards/regulations

WORK TO BE PERFORMED

Load harvested row crop grain.

PERFORMANCE CRITERIA

The harvested row crop grain is loaded to the transport vehicle with a less than 1% crop loss.

Information is recorded accurately on a company weigh ticket.

Time required to complete the skill varies depending on the size of the load and equipment being used.

(Example: 850 bushels of grain are loaded, using an 8-inch auger, in 1/2 hour.)

PERFORMANCE ELEMENTS

1. Perform pre-trip safety inspection.
2. Prepare transport vehicle for loading harvested row crop grain.
3. Load harvested row crop grain into transport vehicle.

PERFORMANCE ASSESSMENT CRITERIA

OSHA standards/regulations are followed.

PRODUCT

The row crop grain is loaded.

PROCESS

All performance elements for loading a row crop grain are critical and must be performed in sequence.

TRANSPORT ROW CROP GRAIN TO A STORAGE FACILITY.

SKILL STANDARD

CONDITIONS OF PERFORMANCE

Given the following:

Harvested row crop grain
Vehicle registration card
Scales
Vehicle load capacity limitations
Vehicle license restrictions
Insurance identification card
Transport vehicle (inspected and loaded)
Grain storage bin
Maps and printed directions
Delivery route and schedule
CDL license
Load/weigh ticket
Occupational Safety & Health Administration (OSHA) standards/regulations

WORK TO BE PERFORMED

Transport harvested row crop grain to appropriate location.

PERFORMANCE CRITERIA

The harvested row crop grain is transported, according to the delivery schedule, without any damage or loss of the crop.

Deliveries are appropriately recorded, secured, and organized with 100% accuracy.

Time required to complete the skill varies depending on the distance to travel, type of product and size of the vehicle.

PERFORMANCE ELEMENTS

1. Determine load capacities and license restrictions of transport vehicle.
2. Prepare to transport row crop grain.
   a. Secure load.
   b. Check load ticket.
   c. Verify destination.
3. Transport row crop grain to destination.
4. Document delivery using weigh ticket, if applicable.
5. Return documentation to supervisor.

PERFORMANCE ASSESSMENT CRITERIA

OSHA standards/regulations are followed.

PRODUCT

The row crop grain is delivered to the designated location.

PROCESS

All performance elements for transporting a row crop grain are critical and must be performed in sequence.

UNLOAD A ROW CROP GRAIN.

SKILL STANDARD

CONDITIONS OF PERFORMANCE

Given the following:

- Unloading equipment (auger)
- Scales
- Load/weigh ticket
- Harvested row crop grain
- Transport vehicle (loaded)
- Grain storage bin
- Storage bin capacity levels
- Occupational Safety & Health Administration (OSHA) standards/regulations

WORK TO BE PERFORMED

Unload harvested row crop grain.

PERFORMANCE CRITERIA

The harvested crop is unloaded from the transport vehicle with a less than 1% crop loss.

Time required to complete the skill varies depending on the size of the load and the equipment being used.

(Example: 850 bushels of grain are unloaded, using an 8-inch auger, in 1/2 hour.)

PERFORMANCE ELEMENTS

1. Identify and adhere to all related safety standards/regulations.
2. Weigh transport vehicle prior to unloading.
3. Turn on and monitor grain spreader.
4. Remove harvested row crop grain using drop method.
   a. Check auger to ensure it is ready.
   b. Maneuver transport vehicle over drop location.
   c. Block transport vehicle and open hopper.
   d. Raise transport vehicle.
   e. Transfer harvested row crop grain.
   f. Ensure all harvested grain is removed.
   g. Lower transport vehicle.
5. Weigh empty transport vehicle.
6. Turn off grain spreader.
7. Obtain signed document of delivery with weigh in and weigh out, if applicable.
8. Return documentation to supervisor.

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PERFORMANCE ASSESSMENT CRITERIA

OSHA standards/regulations are followed.

PRODUCT

The row crop grain is unloaded.

PROCESS

All performance elements for unloading a row crop grain are critical and must be performed in sequence.

MAINTAIN ON-SITE STORAGE OF ROW CROP GRAIN.

SKILL STANDARD

CONDITIONS OF PERFORMANCE

Given the following:

Harvested row crop grain
Target control levels (e.g., moisture, temperature, foreign matter, etc.)
Grain storage bin
Auger
Hopper
Elevator
Grain dryer/fan
Grain cleaner
Grain probe
Grain thermometer
Moisture reader tester
Record keeping system (e.g. computer, etc.)
Manufacturer's service and operating manual(s)
Occupational Safety & Health Administration (OSHA) standards/regulations
Environmental Protection Agency (EPA) standards/regulations

WORK TO BE PERFORMED

Maintain on-site storage of row crop grain.

PERFORMANCE CRITERIA

The moisture content of the grain is within 1% of the desired specification.

Inspections for mold, rodent and insect infestations are conducted as conditions warrant.

Time required to complete the skill varies depending on the facilities and the quantity and quality of grain.

(Example: An inspection is completed, using a probe to obtain a sample from a 20,000-bushel grain bin, in 20 minutes.)

PERFORMANCE ELEMENTS

1. Obtain representative grain sample.
2. Calculate moisture content.
3. Determine amount of time needed for drying.
4. Operate fan (natural air or heat) according to manufacturer's guidelines.
5. Recheck moisture content.

6. Continue process until grain is dried to within 1% of desired level.
7. Move grain to storage bin.
8. Sample grain for insect, mold and rodent damage.
   a. Insert probe and withdraw sample and inspect for damage.
   b. Scout interior and exterior of storage bin.
   c. Determine if an integrated pest management control program is necessary.
   d. Report conditions to supervisor.
9. Utilize all safety standards/regulations.
10. Record and document all drying activities.

PERFORMANCE ASSESSMENT CRITERIA

OSHA and EPA standards/regulations are followed.

PRODUCT

The row crop grain is stored at target control levels.

PROCESS

The performance elements are numbered to show an appropriate sequence for completing the skill; however, a different sequence may be used.

SEGREGATE ROW CROP GRAIN.

SKILL STANDARD

CONDITIONS OF PERFORMANCE

Given the following:

Harvested row crop grain (Genetically Enhanced and Specialty)
Grain segregation specifications
Company/customer requirements
Auger
Reference material for separating grain
Row crop logbook
Product labels
Toolbox (Appendix A)
Occupational Safety & Health Administration (OSHA) standards/regulations
Environmental Protection Agency (EPA) standards/regulations

WORK TO BE PERFORMED

Segregate row crop grain.

PERFORMANCE CRITERIA

The row crop grain is segregated with 100% accuracy.

A less than 1% shrinkage of grain is maintained from delivery to sale.

Time required to complete the skill varies depending on the quantity of grain being segregated.

PERFORMANCE ELEMENTS

1. Select appropriate tools and equipment.
2. Prepare product.
   a. Identify type of grain (Genetically Enhanced and Specialty).
   b. Segregate each commodity.
3. Confirm that products conform to specified requirements.
4. Record information regarding company and customer requirements as well as specifications for grain segregation.

PERFORMANCE ASSESSMENT CRITERIA

OSHA and EPA standards/regulations are followed.

PRODUCT

The selected row crop grains are segregated.

PROCESS

All performance elements for segregating row crop grains are critical and must be performed in sequence.

SKILL STANDARD

CONDITIONS OF PERFORMANCE

Given the following:

State or local road map
Aerial photograph
Plat books
Printed directions
Delivery schedule
Delivery vehicle
Product
Appropriate CDL
Vehicle registration card
Insurance identification card

WORK TO BE PERFORMED

Deliver product to specified location.

PERFORMANCE CRITERIA

Deliveries are completed to the specified location, according to company requirements.

PERFORMANCE ELEMENTS

1. Identify specified location using state or local map, aerial photograph, plat books and directions.
2. Report discrepancies related to meeting delivery timetable.
3. Deliver product to the specified location.
4. Unload product.

PERFORMANCE ASSESSMENT CRITERIA

PRODUCT

The product is delivered to the specified location within the estimated time.

PROCESS

The performance elements for product deliveries to specified locations are critical and performed in sequence.

MAINTAIN A GRASS WATERWAY.

SKILL STANDARD

CONDITIONS OF PERFORMANCE

Given the following:

Tractor with Roll-Over Protective Structure (ROPS)
Seeder (drill)
Grader
Mower
Seed or sod
Field test results
Land use plan
Soil and Water Conservation District standards/regulations
Fence law(s)
Toolbox (Appendix A)
Environmental Protection Ag EPA) standards/regulations

WORK TO BE PERFORMED

Maintain a grass waterway.

PERFORMANCE CRITERIA

The grass waterway is maintained according to the standards and regulations of the Soil and Water Conservation District.

(Example: A 1-acre grass waterway within a 20-acre field is mowed, using a 15-foot mower, in 30 minutes.)

PERFORMANCE ELEMENTS

1. Review critical information for grass waterway.
   a. Land use plan
   b. Soil and Water Conservation District standards/regulations
   c. EPA standards/regulations
   d. Fence laws
2. Identify and inspect grass waterway for erosion and report information back to supervisor.
3. Modify grade or shape to eliminate potential erosion areas.
4. Seed or sod potential erosion areas.
5. Inspect new seed/sod area weekly to evaluate growth.
6. Re-seed and cut grass according to recommendations of the local Soil and Water Conservation District.

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PERFORMANCE ASSESSMENT CRITERIA

EPA and Soil and Water Conservation District standards/regulations are followed.

PRODUCT

The grass waterway is properly maintained to minimize/eliminate erosion.

PROCESS

All performance elements for maintaining a grass waterway are critical and must be performed in sequence.

MAINTAIN A TILE DRAINAGE SYSTEM.

SKILL STANDARD

CONDITIONS OF PERFORMANCE

Given the following:

Tile probe
Tile map
Fence law
Field tile results
Land use plan
Tile
Tile repair equipment
Soil and Water Conservation District standards/regulations
Environmental Protection Agency (EPA) standards/regulations

WORK TO BE PERFORMED

Maintain field tile drainage system.

PERFORMANCE CRITERIA

The tile drainage system is maintained to the standards/regulations of the EPA and Soil and Water Conservation District.

Time required to complete the skill varies depending on the tile system being maintained.

PERFORMANCE ELEMENTS

1. Identify critical information for tile drainage systems.
   a. Land use plan that shows tile locations
   b. Soil and Water Conservation District standards/regulations
   c. EPA standards/regulations
   d. Fence law(s)
2. Inspect tile system including tile outlets.
3. Locate tile breaks visually or by using a tile probe and map.
4. Report breaks to supervisor.
5. Repair breaks in tile.
6. Keep tile lines and outlets clear of all woody plant growth.
7. Update and note tile repairs on tile map.
8. Return tile map to supervisor.

PERFORMANCE ASSESSMENT CRITERIA

EPA and Soil and Water Conservation District standards/regulations are followed.

PRODUCT

The field tile drainage system is properly maintained.

PROCESS

The performance elements are numbered to show an appropriate sequence for completing the skill; however, a different sequence may be used.

SCOUT A ROW CROP FIELD.

SKILL STANDARD

CONDITIONS OF PERFORMANCE

Given the following:

- Appropriate scout documentation forms
- Resource manuals (i.e., pest identification, integrated pest management, control options)
- Field Crop Scouting Manual
- Current and forecast weather reports
- Aerial photograph or diagram of row crop field
- Occupational Safety & Health Administration (OSHA) standards/regulations
- Environmental Protection Agency (EPA) standards/regulations
- Worker Protection Standards (WPS) standards/regulations

WORK TO BE PERFORMED

Scout row crop field and record pest and/or cultural disorders on appropriate scout forms.

PERFORMANCE CRITERIA

Cultural disorders, diseases, insects and weeds are properly identified. The location of identified problems is documented on the aerial photograph or field diagram.

Scouting reports are documented with 100% accuracy.

Time required to complete the skill varies with the type and severity of the pest and/or disorder.

(Example: A 20-acre row crop field with commonly occurring pests and weeds is scouted in one hour. Insects, diseases, weeds and/or cultural problems are identified in 15 minutes. Atypical pests will take longer.)

PERFORMANCE ELEMENTS

1. Identify insects, diseases, weeds and/or cultural problems in row crop field.
2. Document and summarize findings from scouting row crop field.
3. Turn in observations to supervisor.

PERFORMANCE ASSESSMENT CRITERIA

OSHA, EPA and WPS standards/regulations are followed.

PRODUCT

Cultural disorders, diseases, insects and weeds are properly identified.

All observed information is recorded, documented and returned to the supervisor.

PROCESS

All performance elements for assessing crop pests and cultural disorders are critical and must be performed in sequence.

PROCESS WASTE AND RECYCLABLES.

SKILL STANDARD

CONDITIONS OF PERFORMANCE

Given the following:

Materials used in production of agricultural row crops
Waste materials (e.g., bags, plastic, batteries, tires, chemicals, containers, etc.)
Recyclable material
Water-soluble packaging
Waste/recyclables storage facility
Waste/recyclables processing equipment
Personal protective equipment (PPE)
Occupational Safety & Health Administration (OSHA) standards/regulations
Environmental Protection Agency (EPA) standards/regulations
Worker Protection Standards (WPS) standards/regulations

WORK TO BE PERFORMED

Process waste and recyclables in accordance with OSHA, EPA and WPS standards/regulations.

PERFORMANCE CRITERIA

Waste and recyclables are processed in accordance with standards/regulations set by the appropriate regulatory agencies.

Time required to complete the skill varies depending on the quantity of materials and the amount of handling required.

PERFORMANCE ELEMENTS

1. Identify waste and recyclables to be disposed.
2. Don PPE.
3. Minimize waste by using container types that are recyclable (e.g., water-soluble packaging, etc.).
4. Sort recyclables by type.
5. Prepare recyclables for collection and deliver to collection sites.
6. Remove waste and recyclables as they are generated.
7. Store waste and recyclables in correct location.

PERFORMANCE ASSESSMENT CRITERIA

OSHA, WPS and EPA standards/regulations are followed.

PRODUCT

The waste products are disposed of properly according to all government standards/regulations.

PROCESS

All performance elements for proper handling and disposal of waste and recyclables are critical and must be performed in sequence.

SKILL STANDARD

CONDITIONS OF PERFORMANCE

Given the following:

- Property policy and procedures
- Job descriptions/pay scale
- Training manual/information
- Row crop labor budget
- Labor requirements per row crop worksheet
- Employment application forms
- New hire packet (e.g., benefit forms, state and federal forms, etc.)
- Job work orders and reporting information
- Time sheets and job records forms
- Work schedules
- Record keeping system
- Occupational Safety & Health Administration (OSHA) standards/regulations
- Worker Protection Standards (WPS) standards/regulations
- Americans with Disabilities Act (ADA) standards/regulations

WORK TO BE PERFORMED

Maintain staffing requirements for row crop operation.

PERFORMANCE CRITERIA

Staffing requirements of the property are determined and filled to maximize production.

Standards and regulations (facility and governmental) are followed with 100% accuracy.

Time required to maintain staffing varies depending on the job classification, size of the operation, and recruitment and interview time.

PERFORMANCE ELEMENTS

1. Identify labor needs.
2. Review and revise job descriptions.
3. Review pay scale and benefits.
4. Recruit prospective employees.
5. Review applications.
6. Interview prospective employees.

7. Hire new employees.
8. Provide orientation training.
9. Explain benefits to employees.
10. Complete paperwork for personnel records.
11. Communicate personnel policy and procedures.
12. Monitor compliance with state and federal hiring and workplace laws.

PERFORMANCE ASSESSMENT CRITERIA

OSHA, WPS and ADA standards/regulations are followed.

PRODUCT

All row crop operation staffing requirements are identified. Individuals are recruited and hired to meet the labor needs.

PROCESS

All performance elements for establishing a reliable workforce are critical and must be performed in sequence.

INFORM AND MOTIVATE EMPLOYEES.

SKILL STANDARD

CONDITIONS OF PERFORMANCE

Given the following:

- Property policy and procedures
- Job descriptions
- Training manual/information
- Accessible location for job-related materials
- Career planning information
- Labor requirements per row crop worksheet
- Job work orders and reporting information
- Occupational Safety & Health Administration (OSHA) standards/regulations
- Worker Protection Standards (WPS) standards/regulations
- Americans with Disabilities Act (ADA) standards/regulations

WORK TO BE PERFORMED

Inform and motivate row crop employees.

PERFORMANCE CRITERIA

Positive motivation techniques are used to encourage employees to meet or exceed job performance expectations. Employees are informed of all changes at the row crop production facility.

New or revised policy and procedures are communicated to the employees with 100% accuracy.

Time required to inform and motivate employees varies according to the activities being completed.

PERFORMANCE ELEMENTS

1. Conduct informational staff meetings.
2. Coach and support employees.
3. Communicate property policy and procedural changes.
4. Monitor compliance with state and federal hiring and workplace laws.
5. Place job descriptions and other reference materials in accessible location.
6. Provide career planning information to employees, such as
   a. Advancement opportunities.
   b. Requirements for other positions.
   c. Goals to accomplish for advancement.

PERFORMANCE ASSESSMENT CRITERIA

OSHA, WPS and ADA standards/regulations are followed.

PRODUCT

Each employee is informed of changes to facility policy and procedures. Each employee receives positive motivation to increase productivity.

PROCESS

All performance elements for informing and motivating employees are critical.

SUPERVISE EMPLOYEES.

SKILL STANDARD

CONDITIONS OF PERFORMANCE

Given the following:

- Property policy and procedures
- Job descriptions
- Training manual/information
- Work schedules
- Employee evaluation forms including
- Personnel action forms (e.g., change of status, benefit request, etc.)
- Disciplinary forms
- Record keeping system
- Occupational Safety & Health Administration (OSHA) standards/regulations
- Worker Protection Standards (WPS) standards/regulations
- Americans with Disabilities Act (ADA) standards/regulations

WORK TO BE PERFORMED

Supervise and evaluate employees.

PERFORMANCE CRITERIA

Job performance expectations are communicated to the employees. Employee evaluation forms are completed and discussed with each employee before filing.

Forms are completed with 100% accuracy.

Time required to complete supervisory functions varies with each job classification and employee.

PERFORMANCE ELEMENTS

1. Determine job performance expectations.
2. Communicate job performance expectations.
3. Communicate personnel policy and procedures.
4. Provide continuing education as warranted.
5. Review/revise salary schedules.
6. Schedule employee work hours.
7. Settle conflicts among employees.
8. Complete employee evaluation forms.
9. Discuss evaluations with employees.
10. Enforce property policy and procedures.
11. Take disciplinary action.
12. Terminate employees when necessary.
13. Monitor compliance with state and federal hiring and workplace laws.

PERFORMANCE ASSESSMENT CRITERIA

OSHA, WPS and ADA standards/regulations are followed.

PRODUCT

All supervisory functions are completed. Job performance expectations are communicated to the employees.

PROCESS

All performance elements for supervising employees are critical.

PLAN ROW CROP PRODUCTION.

SKILL STANDARD

CONDITIONS OF PERFORMANCE

Given the following:

- Goal-planning worksheets
- Cash-flow worksheet
- Income statements
- Market price cycles
- Crop management guides
- Row crop budget and statements
- Row crop production records
- Yield monitor results/maps
- Marketing plan
- Specialty grain program requ[illegible]ents
- Government farm program r[illegible]ons
- Resource information
- Chemical and fertilizer price lists
- Seed variety production history
- Seed variety price lists
- Occupational Safety & Health Administration (OSHA) standards/regulations
- Environmental Protection Agency (EPA) standards/regulations

WORK TO BE PERFORMED

Develop plan for row crop production business.

PERFORMANCE CRITERIA

The row crop production plan is completed to meet the goals of the operation (i.e., yield, income and budget).

Time required to establish and update the production goals varies depending on the size of the operation and the variety of commodities produced.

(Example: A row crop production plan for an 800-acre farm is updated in two to four hours.)

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PERFORMANCE ELEMENTS

1. Establish goals that may include, but not be limited to
   a. Number of acres to be grown in each row crop.
   b. Specialty grain programs.
   c. Fields to be used for each row crop.
   d. Special considerations for specialty grains.
   e. Chemicals to be used with each row crop.
   f. Government programs.
   g. Field enhancements.
2. Determine methods of business acquisition.
3. Identify government programs available for this operation.
4. Prepare row crop budget.
5. Evaluate yield maps and determine production plan.
6. Calculate best/worst case production results.
7. Compute cash flow budget.
8. Execute specialty grain contract.
9. Select government programs in the best interest of the operation.

PERFORMANCE ASSESSMENT CRITERIA

OSHA and EPA standards/regulations are followed.

USDA farm programs, conservation plans, and specialty grain contracts are established.

PRODUCT

The row crop production is planned.

PROCESS

The performance elements are numbered to show appropriate sequence for completing the skill; however, a different sequence may be used.

SCHEDULE EQUIPMENT AND FACILITIES.

SKILL STANDARD

CONDITIONS OF PERFORMANCE

Given the following:

Equipment
Job work orders
Weather forecast reports
Equipment schedules and maintenance records
Schedules (e.g., planting, spraying, harvesting, etc.)
Storage and drying facilities
Occupational Safety & Health Administration (OSHA) standards/regulations
Environmental Protection Agency (EPA) standards/regulations
Worker Protection Standards (WPS) standards/regulations

WORK TO BE PERFORMED

Schedule equipment and facilities.

PERFORMANCE CRITERIA

Equipment and facility use schedules are set and maintained to maintain/increase productivity.

Time for scheduling equipment and facilities varies depending on the job being performed.

PERFORMANCE ELEMENTS

1. Review weather forecasts for appropriate jobs.
2. Determine number of hours needed to complete a task.
3. Allocate equipment according to necessary field activities.
4. Coordinate grain storage and handling activities.
5. Maintain records.
6. Communicate schedules the day before scheduled activity.

PERFORMANCE ASSESSMENT CRITERIA

OSHA, EPA and WPS standards/regulations are followed.

PRODUCT

All facility and equipment schedules are planned, adjusted and maintained.

PROCESS

The performance elements are numbered to show appropriate sequence for completing the skill; however, a different sequence may be used.

DEVELOP A ROW CROP MARKETING PLAN.

SKILL STANDARD

CONDITIONS OF PERFORMANCE

Given the following:

- Marketing reference materials
- Specialty grain program requirements
- Cash, options, basis and futures quotations
- USDA farm program eligibility, loan and payment rates
- Crop insurance program requirements
- Market cost worksheet
- Record keeping system and specifications

WORK TO BE PERFORMED

Develop and maintain row crop marketing plan.

PERFORMANCE CRITERIA

The marketing program of the row crop production business is planned to maximize income.

A row crop marketing plan is completed in 4 to 8 hours for an 800-acre farm and implemented and maintained in 1 hour per week.

PERFORMANCE ELEMENTS

1. Determine market supply and demand factors.
2. Identify crop market grade factors.
3. Interpret market price quotations.
4. Calculate cash to futures price basis.
5. Calculate price premiums and discounts.
6. Chart commodity prices.
7. Determine commodity price cycles.
8. Determine chart formations.
9. Calculate market costs.
10. Calculate storage costs.
11. Review government and specialty grain programs.
12. Select market for production commodities.
13. Prepare commodity-marketing plan.
14. Calculate transportation costs.
15. Evaluate potential gain/loss by hedging.
16. Make final marketing decisions.

PERFORMANCE ASSESSMENT CRITERIA

PRODUCT

The marketing program is planned to meet the goals of the business.

PROCESS

The performance elements are numbered to show appropriate sequence for completing the skill; however, a different sequence may be used.

INTERPRET PERFORMANCE DATA OF THE ROW CROP PRODUCTION BUSINESS.

SKILL STANDARD

CONDITIONS OF PERFORMANCE

Given the following:

- Row crop production records
- Yield maps
- Fertilizer application maps
- Seed maps
- Scouting reports
- Farm use plan
- Analysis worksheet/program
- Past records
- Past weather data
- Trend analysis worksheet

WORK TO BE PERFORMED

Interpret row crop production performance data to show breakeven costs and measures of efficiency.

PERFORMANCE CRITERIA

The analysis statement to identify the profit/loss is completed in 2 hours.

A row crop marketing plan is completed in 4 to 8 hours for an 800-acre farm and implemented and maintained in one hour per week.

PERFORMANCE ELEMENTS

1. Analyze row crop breakeven point.
2. Analyze row crop measures of efficiency.
3. Prepare row crop analysis statement.
4. Compute row crop financial ratios.
5. Determine years required to pay for land or determine land rental rate adjustment.

PERFORMANCE ASSESSMENT CRITERIA

PRODUCT

Performance data of the row crop production business is interpreted to determine the break even costs.

PROCESS

All performance elements for maintaining a profitable row crop business are critical.

GLOBAL POSITIONING SATELLITE (GPS) MAP INTERPRETATION.

SKILL STANDARD

CONDITIONS OF PERFORMANCE

Given the following:

Yield maps
Seeding maps
Fertilizer application maps
Soil maps
Job cards
Scouting reports
Global Positioning Satellite (GPS) mapping software
Computer with color printer
Occupational Safety & Health Administration (OSHA) standards/regulations

WORK TO BE PERFORMED

Interpret production results of a 20-acre field and determine potential for next production year.

PERFORMANCE CRITERIA

All crop inputs and production maps are integrated with summary data.

All entries are 100% accurate.

(Example: Maps for a 20-acre field are integrated, analyzed, and production changes defined in 2 hours.)

PERFORMANCE ELEMENTS

1. Start GPS mapping software program.
2. Download map data from job cards.
3. Integrate map data.
4. Analyze results.
5. Determine effects of inputs and conditions on production results.
6. Determine changes for next production year (e.g., drainage, tillage practice, seed variety, fertility chemical programs, etc.).
7. Complete action plan for next production year.

PERFORMANCE ASSESSMENT CRITERIA

OSHA, EPA and WPS standards/regulations are followed.

PRODUCT

The field has been assessed for performance potential. An action plan for the next production year is produced.

PROCESS

All performance elements for GPS Map Interpretation are critical and must be performed in sequence.

COMPONENTS

Open and box end wrenches 3/8 thru 1&1/16
½ drive and ratchet set
3/8 drive and ratchet set
Assorted flat screwdrivers (6)
Assorted Phillips screwdrivers (5)
Drivers 3/8 through 9/16
Pry bar
18" pry screwdriver
Hack saw
26" pipe wrench
Crescent wrench
Vise grips
Channel locks
Pliers
Side cutters
Wire strippers
Punch set
Multi-meter
Ball pein hammer
Sledge hammer
Allen wrenches
Jumper cables
Electricians' tape
Duct tape
Spray lubricant (WD40)
Flashlight
Fuses (assorted)

Academic Skills	Skills (and related knowledge) contained in the subject areas and disciplines addressed in most national and state educational standards, including English, mathematics, science, etc.
Assessment	A process of measuring performance against a set of standards through examinations, practical tests, performance observations and/or the completion of work portfolios.
Content Standard	A specification of what someone should know or be able to do to successfully perform a work activity or demonstrate a skill.
Critical Work Functions	Distinct and economically meaningful sets of work activities critical to a work process or business unit which are performed to achieve a given work objective with work outputs that have definable performance criteria. A critical work function has three major components: • **Conditions of Performance:** The information, tools, equipment and other resources provided to a person for a work performance. • **Work to Be Performed:** A description of the work to be performed. • **Performance Criteria:** The criteria used to determine the required level of performance. These criteria could include product characteristics (e.g., accuracy levels, appearance), process or procedure requirements (e.g., safety, standard professional procedures) and time and resource requirements. The IOSSCC requires that these performance criteria be further specified by more detailed individual performance elements and assessment criteria.
Credentialing	The provision of a certificate or award to an individual indicating the attainment of a designated set of knowledge and skills and/or the demonstration of a set of critical work functions for an industry/occupational area.
Illinois Occupational Skill Standards and Credentialing Council (IOSSCC)	Legislated body representing business and industry which establishes skill standards criteria, endorses final products approved by the industry subcouncil and standards development committee and assists in marketing and dissemination of occupational skill standards.
Industry	Type of economic activity, or product or service produced or provided in a physical location (employer establishment). They are usually defined in terms of the Standard Industrial Classification (SIC) system.

Industry Subcouncil	Representatives from business/industry and education responsible for identifying and prioritizing occupations for which occupational performance skill standards are adapted, adopted or developed. They establish standards development committees and submit developed skill standards to the IOSSCC for endorsement. They design marketing plans and promote endorsed skill standards across tne industry.
Knowledge	Understanding the facts, principles, processes, methods and techniques related to a particular subject area, occupation or industry.
Occupation	A group or cluster of jobs, sharing a common set of work functions and tasks, work products/services and/or worker characteristics. Occupations are generally defined in terms of a national classification system including the Standard Occupational Classification (SOC), Occupational Employment Statis OES) and the Dictionary of Occupational Titles (DOT
Occupational Cluster	Grouping of occupations from one or more industries that share common skill requirements.
Occupational Skill Standards	Specifications of content and performance standards for critical work functions or activities and the underlying academic, workplace and occupational knowledge and skills needed for an occupation or an industry/occupational area.
Occupational Skills	Technical skills (and related knowledge) required to perform the work functions and activities within an occupation.
Performance Standard	A specification of the criteria used to judge the successful performance of a work activity or the demonstration of a skill.
Product Developer	Individual contracted to work with the standard development committee, state liaison, industry subcouncil and IOSSCC for the adaptation, adoption or development of skill standards content.
Reliability	The degree of precision or error in an assessment system so repeated measurements yield consistent results.
Skill	A combination of perceptual, motor, manual, intellectual and social abilities used to perform a work activity.
Skill Standard	Statement that specifies the knowledge and competencies required to perform successfully in the workplace.

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Standards Development Committee	Incumbent workers, supervisors and human resource persons within the industry who perform the skills for which standards are being developed. Secondary and postsecondary educators are also represented on the committee. They identify and verify occupational skill standards and assessment mechanisms and recommend products to the industry subcouncil for approval.
State Liaison	Individual responsible for communicating information among all parties (e.g., IOSSCC, subcouncil, standard development committee, product developer, project director, etc.) in skill standard development.
Third-Party Assessment	An assessment system in which an industry-designated organization (other than the training provider) administers and controls the assessment process to ensure objectivity and consistency. The training provider could be directly involved in the assessment process under the direction and control of a third-party organization.
Validity	The degree of correspondence between performance in the assessment system and job performance.
Workplace Skills	The generic skills essential to seeking, obtaining, keeping and advancing in any job. These skills are related to the performance of critical work functions across a wide variety of industries and occupations including problem solving, leadership, teamwork, etc.

Margaret Blackshere	AFL-CIO
Judith Hale	Hale Associates
Michael O'Neill	Chicago Building Trades Council
Janet Payne	United Samaritans Medical Center
Gene Rupnik	Hospitality Industry
Jim Schultz	Illinois Retail Merchants Association Walgreen Company
Larry Vaughn	Illinois Chamber of Commerce

APPENDIX D

AGRICULTURE AND NATURAL RESOURCES SUBCOUNCIL

Lanny Anderson	Black Hawk College, E. Campus
Steve Bailey	Family Tree & Garden Center
Rick Butler	Pekin Hardwood Lumber Co., Inc.
David Gillespie	Section Manager, Illinois Department of Conservation
Eldon Haub	Illinois State Florists Association Forget-Me-Not Flowers
Harold Hawkinson	Farm Owner/Operator
Paul Julius	Executive Director Midwest Food Processors Association
John Kraft	Owner Kraft Fertilizer, Inc.
Thomas Guth	Lexington High School
Glen Nichols	President Precision Scales
Richard W. Nichols	Bureau of Land & Water Conservation
Tony Romolo	Illinois Laborers and Contractors Construction Apprenticeship and Training Program
Hugh David Scates	Pat Scates and Sons
Sharon Schwarz	Subcouncil Chair Schwarz Nursery
Lue Walters	Assistant State Conservationist for Community Assistance
Tom Wiles	State Liaison Illinois State Board of Education
William Schreck	State Liaison Illinois State Board of Education

APPENDIX E

ROW CROP PRODUCTION CLUSTER STANDARDS DEVELOPMENT COMMITTEE

Mark Boesdorfer	Farmer Williamsville, IL
Howard Brown	Mahomet, IL
Terri Campion	Wyoming, IL
Ervin Caselton	Crops Department Manager Henry Service Company
Bobby Dowson	Illinois Department of Agriculture Bureau of Marketing and Promotions
Tom Elmore	Director of Engineering DICKEY-john
Terry English	Illinois Department of Agriculture Bureau of Marketing and Promotions
Peter Gill	Princeville, IL
Donnie Hermes	DICKEY-john
Russ Higgins	Morris, IL
Greg Jones	Field Sales Agronomist Pioneer Hi-bred
Dave Mowers	Mower's Soil Testing Plus, Inc.
John Murphy	Bradford, IL
Steven Pitstick	Maple Park, IL
Brett Roberts	State Conservation Agronomist, CCA USDA Natural Resources Conservation Service
Doug Schwartzkopf	General Manager Will DuPage Service Company
Sharon Schwarz	Schwarz Nursery
Frank Selmi	Selmi's Greenhouse and Market

APPENDIX E *(Continued)*

ROW CROP PRODUCTION CLUSTER STANDARDS DEVELOPMENT COMMITTEE

Anthony Strom	Oneida, IL
Ron Tombaugh	President Debron Enterprises
Scott Welker	Pioneer Hi-bred
Mark Werth	Illinois Department of Agriculture Bureau of Land and Water Resources
Jim Etheridge, Ph.D.	Product Developer Chairman, Agriculture Department Joliet Junior College
Tom Wiles	State Liaison Illinois State Board of Education
William Schreck	State Liaison Illinois State Board of Education

I. Occupational Definition and Justification

A. A typical farmer is manager, crew boss, laborer, and bookkeeper. Large farms may hire managers to oversee and coordinate farming activities. Today's farms are increasing in size and mechanization. Farming often involves large capital outlays and numerous skills as well as a lot of personal time and energy. Some individuals farm on a part-time basis because of the seasonal work, supplementing their incomes with other work. The workload and duties vary with the size and type of farm and the season of the year.

1. **Row Crop Workers** help with the year-round farm operations and maintenance. Work varies with the type of farm and the season. It include tasks such as plowing, cultivating, fertilizing and spraying crops, operating machinery, and repairing fences, buildings and farm equipment. Seasonal row crop workers move from place to place following the harvest.

2. **Row Crop Producers and Managers** are concerned with the efficient and profitable production of agricultural goods. They must also be familiar with all phases of farming such as crop growth, insect and disease control and federal and state regulations that apply to farm practices. In addition, Row Crop Managers are responsible for production management decisions effecting the row crop operation. These include production planning, labor planning and marketing decisions. Owners typically perform all of the duties of a row crop worker, producer and manager.

B. Employment and Earning Opportunities

1. Education and Training Requirements

Knowledge of agricultural practices, equipment operation, building maintenance and pest control, as well as state and federal regulations applicable to farming, is required. The occupations in this occupational cluster require "basic workplace skills and technical training."

2. Employment Opportunities

In Illinois, overall employment of farmers is expected to remain relatively unchanged through 2006. However, a significant number of job openings will arise due to the need to replace some of those who retire. In many local areas throughout Illinois, "farmers" and related occupations are among those expected to provide the most average annual job openings.

3. Earnings Opportunities

	Middle Range Annual Earnings, 1999*
Row Crop Worker	$11,400 - $14,560
Row Crop Producer	$15,000 - $25,000
Row Crop Manager	$16,900 - $33,800
Owner	$21,000 - $50,000

** Middle range is the middle 50%, i.e., one-fourth of persons in the occupation earn below the bottom of the range and one-fourth of persons in the occupation earn above the top of the range. Sources: 1999 Occupational Employment Statistics: Wage Data and Occupational Projections 2006, Illinois Department of Employment Security, Economic Information and Analysis Division; Horizons Career Information System; Encyclopedia of Careers & Vocational Guidance-10th Edition.*

II. Occupational Standards and Credentials

A. Occupational Standards

The Row Crop Standards were developed for a cluster of occupations involved in the production of crops such as corn and soybeans. The occupations include Row Crop Worker, Row Crop Producer, Row Crop Manager and Owner.

B. Assessment and Credentialing System

The Agriculture and Natural Resources Subcouncil is committed to marketing and obtaining support and endorsements from the leading industry associations impacted by skill standards. A number of existing credentials are compatible with the Illinois standards. As a core of standards, their achievement is preparation for credentials that require years of experience, professional involvement and/or further course work in addition to the demonstrated achievement of the standards. The Certified Crop Adviser administered by the American Society of Agronomy (ASA) is an example of an advanced credential that can be earned.

The Subcouncil will review and consider all alternatives for assessing skill standards for Row Crop Production. The need for additional credentialing or certification will be reviewed with strong consideration given to embedding the assessment in the instruction provided at the site.

III. Industry Support and Commitment

A. Industry Commitment for Development and Updating

1. The Subcouncil and Standards Development Committee developed these performance skill standards. The development effort utilized the following steps:
   a. Identification of performance skills
   b. Review of resources
   c. Development of draft performance skills
   d. Convening of Standards Development Committee
   e. Validation and approval of performance skills by Standards Development Committee
   f. Review of skill standards by Standards Development Committee
   g. Review and approval of the skill standards by the Subcouncil and practitioners
   h. Endorsement of skill standards by the Council
2. A list of Agriculture and Natural Resources Subcouncil and Standards Development Committee members may be seen in Appendices D and E.

B. Industry Commitment for Marketing

The Agriculture and Natural Resources Subcouncil is committed to marketing and obtaining support and endorsement from the leading industry associations impacted by the skill standards. Upon recognition/endorsement of the row crop skill standards by the Illinois Occupational Skill Standards Credentialing Council (IOSSCC), the Subcouncil strongly recommends developing and providing and in-service/seminar package for members of the Agriculture and Natural Resources Subcouncil to provide awareness and obtain full industry commitment to the development of a full industry marketing plan.

The Subcouncil encourages the availability of occupational skill standards to the public including students, parents, workers, educators at all levels, employers and industry organizations.

A. Developing an Employment Plan	1. Match interests to employment area. 2. Match aptitudes to employment area. 3. Identify short-term work goals. 4. Match attitudes to job area. 5. Match personality type to job area. 6. Match physical capabilities to job area. 7. Identify career information from counseling sources. 8. Demonstrate a drug-free status.
B. Seeking and Applying for Employment Opportunities	1. Locate employment opportunities. 2. Identify job requirements. 3. Locate resources for finding employment. 4. Prepare a resume. 5. Prepare for job interview. 6. Identify conditions for employment. 7. Evaluate job opportunities. 8. Identify steps in applying for a job. 9. Write job application letter. 10. Write interview follow-up letter. 11. Complete job application form. 12. Identify attire for job interview.
C. Accepting Employment	1. Apply for social security number. 2. Complete state and federal tax forms. 3. Accept or reject employment offer. 4. Complete employee's Withholding Allowance Certificate Form W-4.
D. Communicating on the Job	1. Communicate orally with others. 2. Use telephone etiquette. 3. Interpret the use of body language. 4. Prepare written communication. 5. Follow written directions. 6. Ask questions about tasks.
E. Interpreting the Economics of Work	1. Identify the role of business in the economic system. 2. Describe responsibilities of employee. 3. Describe responsibilities of employer or management. 4. Investigate opportunities and options for business ownership. 5. Assess entrepreneurship skills.
F. Maintaining Professionalism	1. Participate in employment orientation. 2. Assess business image, products and/or services. 3. Identify positive behavior. 4. Identify company dress and appearance standards. 5. Participate in meetings in a positive and constructive manner. 6. Identify work-related terminology. 7. Identify how to treat people with respect.

G. Adapting to and Coping with Change	1. Identify elements of job transition. 2. Formulate a transition plan. 3. Identify implementation procedures for a transition plan. 4. Evaluate the transition plan. 5. Exhibit ability to handle stress. 6. Recognize need to change or quit a job. 7. Write a letter of resignation.
H. Solving Problems and Critical Thinking	1. Identify the problem. 2. Clarify purposes and goals. 3. Identify solutions to a problem and their impact. 4. Employ reasoning skills. 5. Evaluate options. 6. Set priorities. 7. Select and implement a solution to a problem. 8. Evaluate results of implemented option. 9. Organize workloads. 10. Assess employer and employee responsibility in solving a problem.
I. Maintaining a Safe and Healthy Work Environment	1. Identify safety and health rules/procedures. 2. Demonstrate the knowledge of equipment in the workplace. 3. Identify conservation and environmental practices and policies. 4. Act during emergencies. 5. Maintain work area. 6. Identify hazardous substances in the workplace.
J. Demonstrating Work Ethics and Behavior	1. Identify established rules, regulations and policies. 2. Practice cost effectiveness. 3. Practice time management. 4. Assume responsibility for decisions and actions. 5. Exhibit pride. 6. Display initiative. 7. Display assertiveness. 8. Demonstrate a willingness to learn. 9. Identify the value of maintaining regular attendance. 10. Apply ethical reasoning.
K. Demonstrating Technological Literacy	1. Demonstrate basic keyboarding skills. 2. Demonstrate basic knowledge of computing. 3. Recognize impact of technological changes on tasks and people.
L. Maintaining Interpersonal Relationships	1. Value individual diversity. 2. Respond to praise or criticism. 3. Provide constructive praise or criticism. 4. Channel and control emotional reactions. 5. Resolve conflicts. 6. Display a positive attitude. 7. Identify and react to sexual intimidation/harassment.
M. Demonstrating Teamwork	1. Identify style of leadership used in teamwork. 2. Match team member skills and group activity. 3. Work with team members. 4. Complete a team task. 5. Evaluate outcomes.

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